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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/706,074

11/12/2003

V. Reggie Edgerton

LA-1279-339D1US

6363

7590

12/01/2006

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EXAMINER

NGUYEN, HUONG Q

ART UNIT

PAPER NUMBER

3736

DATE MAILED: 12/01/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/706,074

Applicant(s)

EDGERTON ET AL.

Examiner

Helen Nguyen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 August 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 28-49 is/are pending in the application.
- 4a) Of the above claim(s) 44-49 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 28-43 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>11/12/2003</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Applicant's election of Group 1, **Claims 28-43** in the reply filed on 8/31/2006 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).
2. Claims 44-49 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 8/31/2006.
3. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Priority

4. Applicant's claim for the benefit of a prior-filed application under 35 U.S.C. 119(e) or under 35 U.S.C. 120, 121, or 365(c) is acknowledged, namely, priority to divisional application 09643134, now US Patent No. 6666831, which claims benefit from provisional application 60150085, filed on 8/20/1999.

Information Disclosure Statement

5. The information disclosure statement (IDS) submitted on 11/12/2003 is/are acknowledged. The submission is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

Claim Objections

6. **Claim 39** is objected to because of the following informalities: the step recited in said claim is listed twice. Applicant should delete the redundant phrase. Appropriate correction is required.

Claim Rejections - 35 USC § 112

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

8. **Claims 28-43** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. This includes but is not limited to lack of antecedent basis, indefinite claim language, and other issues as presented in further detail below. Applicant is requested to review said claims to correct all and other §112 issues not listed as follows.

9. In regards to **Claim 28**, it is unclear what is claimed by “as well as others with injury affecting locomotion” as recited in the preamble.

10. In regard to at least **Claims 31 and 33-35**, there is insufficient antecedent basis for the limitations in the claim. Said claims recite dependency from Claim 28 from which there is a lack

of antecedent basis for the following. For example, Claim 31 recites "said linkage system." Claim 33 recites "the exoskeleton linkages," "the treadmill," "the feet," and "the programmable stepping device." Claim 34 recites "said control system" and "the exoskeleton system." Claim 35 recites "the treadmill" and "said computer-based control system." Applicant is advised to review the claim dependency of all claims to ensure that appropriate dependency is recited to avoid lack of antecedent basis.

11. In regards to **Claim 33**, "control algorithms" is not a method step and thus the claim indefinite because it is unclear if a method is claimed or not. It is suggested that said claim should recite "controlling algorithms."

12. Applicant is requested to review said claims to correct all and other §112 issues not listed as follows.

Claim Rejections - 35 USC § 102

13. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

14. **Claim 28** is rejected under 35 U.S.C. 102(b) as being anticipated by Iijima (US Pat No. 5190507). Iijima discloses a method comprising the steps of: (a) providing an individually adjustable automated body weight suspension training system, best seen in Figure 1; (b) operating multiple sensors (105, 125) wherein said sensors provide feedback to adjust the automated body weight suspension training system, as best seen in Figure 7.

Claim Rejections - 35 USC § 103

15. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

16. **Claims 28-31, 35, 38, and 41-43** are rejected under 35 U.S.C. 103(a) as being unpatentable over Ferrati (US Pat No. 5961541) in view of Iijima.

17. In regards to **Claim 28**, Ferrati discloses a method for assisting and easing the rehabilitation of spinal cord, stroke and traumatic brain injured people to regain walking capabilities comprising the steps of providing an individually adjustable body weight suspension training system (R,S,T,U) (Col.6: 60-67; Col.7: 1-3), as best seen in Figure 5. However, Ferrati does not disclose said system as automated, operating multiple sensors to provide feedback to adjust the automated body weight suspension training system. Iijima discloses an adjustable automated body weight suspension system as explain above operating multiple sensors wherein said sensors provide feedback to adjust the automated body weight suspension training system to provide an improved device that can adjust accordingly to system changes to be more responsive to patient use, best seen in Figure 7. Therefore, it would have been obvious to one of ordinary skill in the art to modify the body weight suspension training system method of Ferrati to make it automated and include the step of operating multiple sensors to provide feedback to adjust the automated body weight suspension training system for a superior device that can take into account system changes and thus be more responsive to the patient during use.

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18. In regards to **Claim 29**, Ferrati discloses the method further comprising the steps of: (a) utilizing two pairs of motor-driven mechanical linkage units (A), best seen in Figures 1-2 (Col.1:49-67; Col.2: 1-32; Col.4: 9-12); (b) having each of said units with two mechanical degrees-of-freedom; (c) connecting said units with their drive elements to a fixed base, referred to as "framework" (D), of a treadmill, referred to as "conveyor belt" (B), best seen in Figure 2 (Col.4: 47-58); (d) attaching said linkages' free ends the patient's legs at two locations at each leg, best seen in Figure 2; (e) serving one leg in the sagittal plane of bipedal locomotion with a first linkage pair; (f) serving the other leg in the sagittal plane of bipedal locomotion with a second linkage.
19. In regards to **Claim 30**, Ferrati discloses the method further comprising the step of: (a) adjusting an exoskeleton linkage system (A) with its passive compliant elements to an individual patient's geometry and dynamics, best seen in Figure 2 (Col.2: 39-48).
20. In regards to **Claim 31**, Ferrati discloses the method further comprising the step of (a) arranging said linkage system (A); (b) reproducing the profile of bipedal locomotion (Col.2: 44-48); (c) standing in the sagittal plane, from a fixed base.
21. In regards to **Claim 35**, Ferrati discloses the method further comprising the step of: attaching a keyboard, referred to as "remote control," to the treadmill (B) wherein the user, one or more, selected from the group consisting of patient, therapist, physician and assistant can

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input selected kinematic and dynamic stepping parameters to said computer-based control system (Col.2: 26-31; Col.7: 19-23).

22. In regards to **Claim 38**, Ferrati discloses the method further comprising the steps of: (a) minimizing an external mechanical load acting on the patient (Col.4: 22-29), also best seen in Figure 5 (Col.7: 1-12); (b) maximizing work performed by the patient in generating effective stepping and standing during treadmill training.

23. In regards to **Claim 41**, Ferrati discloses the method further comprising the step of: positioning, actively, the hips.

24. In regards to **Claim 42**, Ferrati discloses the method further comprising the step of: controlling, actively, the hips with dual T-bars, best seen in Figure 1-2.

25. In regards to **Claim 43**, Ferrati discloses the method further comprising the step of: controlling, actively, the hips with motorized semi-elastic belts (H) (Col.4: 22-31; Col.2: 39-56).

26. **Claims 32-34, 36-37, and 39-40** are rejected under 35 U.S.C. 103(a) as being unpatentable over Ferrati in view of Iijima, further in view of Joutras et al (US Pat No. 5980435).

27. In regard to **Claims 32 and 34**, Ferrati in combination with Iijima disclose a method comprising the steps of: (a) controlling, with a computer-based control system, a programmable

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stepping device, best seen in Figure 2; (b) controlling, with a computer-based control system, a linkage system (A) of the programmable stepping device, (Col.2: 39-56); (c) referencing said control system to individual stepping models and treadmill, referred to as "conveyor belt" (B), speed (Col.2: 66-67; Col.3: 1-7).

28. However, Ferrati in view of Iijima do not disclose using force, torque, electromyogram (EMG), acceleration, or pressure data to also control said system, sensing said data with sensors at the linkages' exoskeleton contact area and using it as feedback. Joutras et al disclose a method comprising sensing force (Col.40: 7-9), EMG (Col.40: 10), acceleration (Col.43: 13-14), pressure (Col.43: 13), or torque (Col.43: 63) through sensors (Col.39: 17-24) to gather data allowing for specific control and therefore feedback of an analogous rehabilitation method (Col.40: 7-12; Col.43: 50-54).

29. Therefore, it would have been obvious to one of ordinary skill in the art to modify the method of Ferrati as modified by Iijima to include sensing force, torque, EMG, acceleration, and pressure data from various sensors placed on the exoskeleton and then using it as feedback, as taught by Joutras et al, to improve the method by incorporating specific data allowing for greater subsequent control through feedback. Moreover, it would have been obvious to one of ordinary skill in the art to modify the method of Ferrati in combination with Iijima and Joutras et al to require no wires to attach to the human body for more convenient use.

30. Similarly, in regards to **Claim 33**, Ferrati and Iijima disclose a method comprising the steps of: (a) control algorithms of the exoskeleton linkages' computer control system but do not disclose (b) utilizing control algorithms for "intelligent" control for biped locomotion wherein

said algorithms distinguish between the amount and direction of the force/torque generated by the patient, by the feet's contact with the treadmill, and by the action of the programmable stepping device. However, Ferrati does disclose taking into account treadmill (B) characteristics (Col.3: 1-6). Joutras et al disclose taking into force and torque generated by the patient for the reasons discussed above, as well as providing feedback from such data and others to enable more control, also explained previously.

31. Therefore, it would have been obvious to one of ordinary skill in the art to modify the invention of Ferrati as modified by Iijima and Joutras such that said control algorithms are intelligent and can control between the amount and direction of force/torque generated by the patient, the feet's contact with the treadmill, and by the action of the programmable stepping device, to provide another means of control through feedback for an improved method.

Furthermore, it would also have been obvious to one of ordinary skill in the art to monitor and control each leg independently, to provide an even greater amount of control and feedback by differentiating between the two legs.

32. In regards to **Claim 36**, Ferrati in view of Iijima disclose the method above but do not disclose the step of utilizing an external digital monitor system wherein the patient's stepping performance is selectively displayed in real time. Joutras et al disclose a method using an external digital monitor to view patient data or activity (Col.41: 38-40). Therefore, it would have been obvious to one of ordinary skill in the art to modify the method of Ferrati as modified by Iijima to include utilizing an external digital monitor system to display patient performance in real time, as taught by Joutras et al, as an effective method of relaying patient data.

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33. In regards to **Claim 37**, Ferrati in view of Iijima disclose the method above but do not disclose the step of utilizing a data recording system wherein the storage of all training related and time based and time coordinated data, including electromyogram (EMG) signals, for off-line diagnostic analysis is enabled. Joutras et al disclose a method utilizing remote transmission of data, such as EMG signals (Col.39: 19-20), to enable remote users to access data (Col.39: 12-23, 42-46). Therefore, it would have been obvious to one of ordinary skill in the art to modify the method of Ferrati as modified by Iijima to utilize a data recording system wherein the storage of all data for off-line diagnostic analysis is enabled, as taught by Joutras et al, to allow remote users to access said data.

34. In regard to **Claims 39-40**, Ferrati in combination with Iijima disclose the method above but do not disclose the step of applying stimulation or vibration to selected flexor muscles and associated tendons. Joutras et al disclose a method comprising providing muscular stimulation to strengthen muscular motion at a predetermined time to permit patients to be ambulatory when they otherwise would not be ambulatory, such as to avoid knee buckling (Col.39: 55-67; Col.40: 1-12). Therefore, it would have been obvious to one of ordinary skill in the art to include in the method of Ferrati as modified by Iijima the step of applying stimulation or vibration to selected muscles and thus the associated tendons, as taught by Joutras et al, to improve the rehabilitation method by allowing patients to exercise for longer periods by strengthening the muscles or to help prevent knee buckling.

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Conclusion

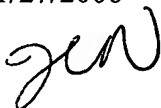
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Helen Nguyen whose telephone number is 571-272-8340. The examiner can normally be reached on Monday - Friday, 8 am - 5 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Max Hindenburg can be reached on 571-272-4726. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

HQN

11/27/2006



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